

AEROSOL PROPERTIES FROM MISR MULTI-ANGLE IMAGING

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Earth Observing System's MISR (Multi-angle Imaging SpectroRadiometer) was launched into a 10:30 AM, sun-synchronous, polar orbit aboard the EOS Terra spacecraft in December 1999. It measures upwelling radiance from Earth in 4 spectral bands centered at 446, 558, 672, and 866 nm, at each of 9 viewing angles spread out along the flight path from 70.5 degrees forward to 70.5 degrees aft. We will use the data to characterize aerosol properties, surface albedo and bi-directional reflectance, and cloud properties.

Aerosol retrieval simulation studies show that with MISR data, under good observing conditions, we should distinguish particle properties over dark water far better than with previously available global data. With our generic retrieval, we constrain column-mean-weighted aerosol optical depth, effective size distribution, shape, and indices of refraction (Kahn et al., 1998; 1997). Our alternative climatological retrieval interprets MISR observations in terms of distinctions among mixtures of assumed, climatologically likely, pure particle types (Kahn et al., 1999). We also anticipate retrieving aerosol optical depth over heterogeneous land sites (Martonchik, 1997). We will present dark water retrievals over Chesapeake Lighthouse and Nauru, along with heterogeneous land retrievals over sites in the southwest US, using MISR data from the EOS Terra mission. From these data, we will begin to assess MISR's ability to track the movements of air masses containing different types of maritime and continental mixtures of particles.